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America prior to 1790, and it only remains to add that the general tables derived from the first and subsequent censuses, 1790 to 1900, fill one hundred and eleven of the quarto pages of this most excellent census report. Finally, to make the volume of the greatest possible utility, there is an index of more than four full pages of three columns each.

F. S. CRUM.

WHOLESALE PRICES IN CANADA, 1890-1909.

Special Report by R. H. Coats, B. A., associate editor of the *Labour Gazette*. Government Printing Bureau, Ottawa. 1910. pp. xiii, 509.

For some years past the Canadian *Labour Gazette* has published brief monthly notices of significant changes in retail and wholesale prices. Growing popular interest in the economic problems connected with the recent rise of prices led to the decision of the Department of Labour to take up the compilation of price statistics in a more systematic and comprehensive way. Since February, 1910, the *Labour Gazette* has contained monthly quotations of over thirty items entering into the cost of living, including the retail prices of important commodities of household consumption, together with rentals. Such items are obtained from forty-eight localities. The present volume is the initial installment of a compilation of wholesale prices, which it is planned to continue at regular intervals. As the investigation of wholesale prices was carried backward to 1890 the present publication may be regarded as establishing a foundation for the future continuations, and as such is comparable to the first installment of the series of wholesale prices published by the United States Bureau of Labor.*

The Canadian report contains the wholesale prices of 230 commodities, which is less by only twenty-eight than the number at present gathered by the American bureau (as the United States Bureau of Labor may for convenience's sake be called). It is announced, moreover, that an increase in the number of price series may be expected in future reports. For the most part these prices are for the first market day of each month, but thirty-one series are given only in the form of annual averages. Most of these thirty-one series are for manufactured commodities for which changes in price are apt to happen infrequently. In the few cases in which monthly prices would have been desirable but were found impossible, we are assured that the yearly averages are "based in each case on expert opinion." In twenty-three cases it was not found possible to begin the series of quotations with 1890, and there are a few other gaps and irregularities, including those resulting from the inclusion of quotations on several varieties of fresh fruit, which are limited, very properly, to the months in which such fruits are in season. On the whole, the data of the report do not compare quite favorably in respect to homogeneity and consistency with the foundation tables of the American bureau,—the only other price tables fairly comparable with the Canadian tables. Even

* *Bulletin of the Department of Labor*, No. 39, March, 1902.

this comparison is not entirely fair to the Canadian report, for the American tables cover a period shorter by seven years.

It is to be hoped that in the continuations of the Canadian tables the practice of the American bureau in giving weekly quotations of such variable prices as those of butter, eggs, grain, live stock and meats, will be followed. The price on the first market day of each month may often be an insufficient guide to the student interested in particular price variations, and may easily lead to misleading annual average prices for particular commodities, although it is not to be expected that such discrepancies will appreciably affect the measure of the general movement of price variations. The quotations on raw cotton, raw silk and raw rubber are New York prices, and the quotations on furnace coke are from Connellsville. With these exceptions the prices quoted are from important Canadian wholesale markets, most frequently Montreal or Toronto.

The sources used were those customarily drawn upon in such investigations: trade journals, newspapers, printed reports of local exchanges and boards of trade and the books of manufacturers and wholesalers. One notes with satisfaction that quotations drawn from printed sources were verified so far as possible by "reference to long-established and favorably known business firms dealing in the articles in question." Especial care was used to verify newspaper quotations in this way. In respect to the fullness of detail with which these sources of information are specified and described the Canadian report sets a new standard (and a very high one) for reports of this kind.

TABLE I.

DISTRIBUTION OF SERIES OF QUOTATIONS IN SPECIFIED GROUPS:
REPORT ON WHOLESALE PRICES IN CANADA.

Group.	Number of com- modities.	Group.	Number of com- modities.
1. Grains and fodder.....	13	8. Metals and implements...	27
2. Animals and meats.....	15	9. Fuel and lighting.....	10
3. Fish.....	9	10. Building material—	
4. Dairy produce.....	5	(a.) Lumber.....	11
5. Other foods.....	57	(b.) Miscellaneous build- ing materials.....	14
6. Textiles—		(c.) Paints, oils and glass	14
(a.) Woolens.....	5	11. House furnishings.....	16
(b.) Cottons.....	4	12. Drugs and chemicals	15
(c.) Silks.....	3	13. Miscellaneous—	
(d.) Linens.....	3	(a.) Furs.....	4
(e.) Jutes	2	(b.) Liquors and tobacco	4
(f.) Miscellaneous.....	2	(c.) Sundry.....	6
7. Hides, leather, boots and shoes	11		

Possibly the most important criterion of the quality of such an investigation is the selection and distribution of the commodities listed. While relatively less significant in so inclusive a report as this one than in one quoting fewer commodities, it nevertheless remains a matter of prime importance. Table I shows the classification of commodities adopted for purposes of tabulation and averaging, and the number of commodities in each group. In Table II, I have redistributed the list of commodities

TABLE II.

COMPARISON OF DISTRIBUTION IN SPECIFIED GROUPS: UNITED STATES
BUREAU OF LABOR AND CANADIAN QUOTATIONS OF WHOLESALE
PRICES.

U. S. Bureau of Labor Classification.	Number of quotations in each group		Commodities in Canadian list not in U. S. list.
	U. S.	Canadian	
Farm products.....	16	23	6
Food, etc.....	53	60	22
Cloth and clothing.....	61	25	12
Fuel and lighting.....	13	9	1
Metal and implements.....	37	30	12
Lumber and building materials.....	21	37	17
Drugs and chemicals.....	9	16	7
House furnishing goods.....	14	16	8
Miscellaneous.....	12	14	7
Totals.....	236	230	92

figuring in the Canadian report into the familiar groups of the United States Bureau of Labor tables (without striving for absolute precision in the disposition made of every entry). The American list introduced for purposes of comparison includes only the 236 commodities for which the quotations throughout the period since 1890 have been for "practically the same description of article." * That the two lists differ in important particulars is at once apparent. The most noticeable difference is in the group of textiles,—“cloth and clothing,”—which includes only eleven per cent. of the Canadian list as against twenty-six per cent. of the American list. But the two lists of commodities are even more dissimilar than is indicated by the differences in the relative importance given to the various groups. As is indicated by the figures in the third column of Table II, ninety-two of the commodities in the Canadian list, or forty

* *Bulletin of the Bureau of Labor*, March, 1908, p. 316.

per cent. of that entire list, are not included in the American list. After making due allowance for the fact that some of the Canadian groups contain more commodities than the corresponding American groups it will easily be seen that this further lack of coincidence is relatively most apparent in the groups of cloth and clothing, house furnishing goods, miscellaneous goods, and metals and implements, in the order named.

But the differences between the two lists are still greater than has even yet been indicated, for in the foregoing comparison no account is taken of the fact that in several instances separate quotations are given in the Canadian list for different grades or brands of a commodity to which but one series is allotted in the American list, or of the fact that one series of quotations in the Canadian list is in several cases represented by several series in the American list. The Canadian list, for example, gives three series for hides and one series for bacon, as against one for the former and two for the latter in the American list. The third column of Table II simply shows the number of individual series of price quotations in the Canadian list which are not represented in the American list by one or more series of quotations of similar commodities, and should be taken as an index rather than a measure of the lack of coincidence between the two lists.

That "beggars cannot be choosers" has more than once stood as an apology for the shortcomings of compilations of price statistics, and it would seem easily possible that limitation of sources has been a more serious factor in determining the makeup of the Canadian list than that of the American. But this should not be taken as indicating that the Canadian list is necessarily the inferior one. Moreover, I am inclined to doubt that paucity of materials has been the controlling reason for the variations of the Canadian list from the pattern set by the American list. Further reasons, which seem to be fairly sufficient in themselves, are to be found in (1) differences between the dominant features of industry and trade in Canada and in the United States, coupled with (2) adherence to somewhat different purposes in the compilation of the two lists. In the Canadian report we find, for example, a relatively larger list of farm products, a relatively smaller list of manufactured staples (especially textiles), a relatively larger list of various kinds of lumber and other building materials, and a noticeably larger assortment of miscellaneous articles important in retail, and hence in wholesale trade. In these and other points (such as the presence of four series of furs in the Canadian list and the absence of furs in the American list), the relatively immature condition of Canadian industrial life is reflected.

This consideration gains in significance in view of the statement of the *Report* (page 3) that as the object of the investigation was "to obtain a result representative of cost of living and the industrial life of the community as a whole, the plan was to embrace as many as possible of the main staple articles of Canadian production and consumption consistent with the avoidance of duplication and the preservation of proportion as between the several divisions into which the inquiry fell." Again, it is stated (page

8) that "The consumption standard has formed the basis of selection; but the aim has been to reflect production and general trade as well." As a matter of fact about forty-three per cent. of the commodities in the Canadian list are foods or food materials, and about thirteen per cent. may fairly be brought under the head of "clothing." These proportions are very close to measuring the importance of food and clothing respectively as articles of consumption, as indicated by the study of workingmen's budgets. In the American list, on the other hand, food and clothing count for thirty-four and sixteen per cent., respectively, of the total number of series of quotations.* That is, the Canadian list seems to satisfy the requirements of the consumption standard far more closely than does the American list. But this is hardly a mark of superiority in the Canadian list. The monthly statistics of "cost of living," previously mentioned, should undoubtedly be interpreted in the light of the consumption standard, but a table of wholesale prices can be only indirectly useful in this way. Tables of other wholesale prices have other uses. They illuminate some of the phenomena of periods of business prosperity and depression, and they constitute the most important single tool of the student of the effect of the increasing production of gold upon prices. But for such purposes it is sufficient if they "reflect production and general trade" in a fairly adequate way.

On general grounds, therefore, it may seem that the Canadian tables concede too much to the demands of the consumption standard. But a detailed examination of the list has served to convince me that, whether on account of a happy coincidence between the importance of particular commodities in Canadian industry and trade and their importance in terms of the consumption standard, or because of the careful way in which the dual purpose of the tables has been kept in mind by the compiler of the list, the Canadian tables do afford unusually excellent material for one who approaches the subject from the side of industry and trade. Averages based on so large a group of quotations are, of course, bound to be fairly precise in any case. But over and above the merit of inclusiveness, the Canadian tables have the merit of being a really miscellaneous (non-specialized) group of quotations,—fairly constituting a "random sampling" of the multitude of commodities actually priced in the market.

In reducing each series of price quotations to relative prices, the average prices of the decade 1890 to 1899 were used as the base. This facilitates comparisons with the relative prices of the American tables, which are computed on the same base. The general trend of prices is shown by simple unweighted arithmetic averages. For test purposes a weighted average was computed, the weights being substantially those recommended by the committee of the British Association in 1888. As might be expected, the curve of weighted averages follows very closely the curve of unweighted averages, although it drops somewhat lower in 1897, the low year, and rises somewhat higher in 1907, the high year. These greater fluctuations (sometimes misinterpreted as "greater sensitiveness") of

* Prof. J. P. Norton, in *Quarterly Journal of Economics*, Vol. xxiv, p. 755.

the weighted average are evidently due in this case to the greater importance assigned in it to the products of the farm, with their extreme price fluctuations. Unweighted index numbers are also given for each group and subgroup of the classification shown in Table I, above, and average relative prices in 1909 are given for other groupings. All these averages, together with the series of relative prices for each of the 230 commodities are shown graphically in an elaborate series of charts.

TABLE III.

AVERAGE PER CENTS. OF INCREASE SHOWN BY WHOLESALE PRICES IN CANADA IN 1909.

Group	Compared with 1890	Compared with decade 1890-1899	Compared with the low year
Grains and fodder.....	28.4	49.9	85.9....1897
Animals and meats.....	33.6	48.6	80.3....1896
Dairy produce.....	29.7	33.6	48.2....1897
Fish.....	29.7	34.0	47.9....1892
Other foods.....	*11.8	7.6	25.0....1897
Textiles.....	*2.8	8.3	15.7....1895
(a) Woolens.....	7.3	14.2	34.2....1902
(b) Cottons.....	10.7	29.8	43.5....1898
(c) Silks.....	*27.1	*6.8	5.9....1901
(d) Flax products.....	*3.2	*4.0	22.6....1895
(e) Jutes.....	5.2	12.5	25.7....1898
(f) Oilcloths.....	*27.6	*4.6	17.6....1899
Hides, leathers and boots and shoes.....	34.5	35.4	45.9....1896
Metals and implements.....	*14.0	2.1	14.9....1897
Fuel and lighting.....	*3.4	3.8	11.0....1898
Building materials:—			
(a) Lumber.....	49.3	54.6	70.2....1898
(b) Miscellaneous building materials.....	23.4	35.2	41.5....1897
(c) Paints, oil and glass.....	*11.2	5.7	20.9....1898
House furnishings.....	10.1	10.4	13.2....1896
Drugs and chemicals.....	*6.3	3.9	11.3....1899
Miscellaneous:—			
(a) Furs.....	162.6	127.2	182.2....1895
(b) Liquors and tobacco.....	23.8	17.5	23.8....1890
(c) Sundry.....	8.5	21.6	33.3....1897
All.....	9.8	21.2	31.4....1897

* Decrease.

A comparison of the general index number for the 230 commodities with the similar index number computed from the American list shows that relative prices in Canada did not, on the average, fall quite so low in 1897 nor rise quite so high in 1907 as did relative prices in the United States (and this notwithstanding the much greater importance of agricultural products in the Canadian list). A further, and possibly less valid, comparison with Mr. Sauerbeck's index number, recalculated to the base of average prices in the decade 1890-1899, indicates that since 1899 the movement of prices in Canada has been about midway between the movement of prices in England and in the United States. But it is beyond the scope of this review to even summarize the more important results of this thoroughly praiseworthy investigation. In Table III, however, one of the more important summary tables of the Report is reprinted. It may be expected that the report will be utilized in connection with the American tables by those interested in the effect of the tariff on the movements of particular groups of prices in the United States,—and there is no reason why it should not be, if due account is taken of the many and frequently subtle difficulties in comparisons of that kind.

An appendix of seventy pages contains a "Memorandum on the construction of an index number of commodity prices, with a review of important British and foreign index numbers, and a statement relating to the causes and effects of variations in prices." This may be commended as accurate and well balanced, although it contains nothing not conveniently accessible elsewhere. The list of index numbers that have been constructed in the United States omits the important one compiled by Prof. John R. Commons,* as well as Prof. W. C. Mitchell's greatly improved retabulations of the results of the Aldrich inquiry.†

ALLYN A. YOUNG.

Two recent volumes that should be of especial interest to teachers of statistics are a *Primer of Statistics*, by W. P. and E. M. Elderton (London: A. and C. Black, 1910), and Mr. A. L. Bowley's *An Elementary Manual of Statistics* (London: Macdonald and Evans, 1910).

The *Primer of Statistics* is designed to carry out a suggestion of Sir Francis Galton (who contributes a preface to the book) to the effect that the elementary concepts of the modern system of biometric statistics might be explained in a much simpler fashion than has been usual. In this aim the authors have succeeded: the book is, indeed, a veritable primer. Frequency distributions and their important constants, such as the median, quartile, mode, standard deviation, and coefficient of correlation, are explained in a very elementary way and are illustrated by concrete examples of the distribution of cricket scores and of simple biometric data. The discussion does not penetrate into the subject far

* *Quarterly Bulletin of the Bureau of Economic Research*, July, October, 1900.

† "Gold, Prices and Wages under the Greenback Standard," *Publications of the University of California, Economics*, Vol. I.